

Lecture 8

Linkers

CS 241: Foundations of Sequential Programs
Fall 2009

Troy Vasiga et al
University of Waterloo

Loading Review

Write the MERL file for the following MIPS code:

A: .word B

B: .word 7

C: .word 0xA

D: .word C

Combining Programs

- ▶ Why?
- ▶ When would we want to assemble?
- ▶ Example Slides 1 and 2

Combining Programs: Option 1

Combining Programs: Option 2

Modifying the assembler

- ▶ Let's look at the MERL format again: ESR and ESD
- ▶ The `.import` and `.export` directives.

MERL Format

- ▶ Header cookie
- ▶ Length of entire .merl file
- ▶ Length of just MIPS program
- ▶ Program code
- ▶ Notes of what to change

See full description on CS241 webpage.

Linker Pseudocode

1. Concatenate
2. Construct ESD
3. Use ESR
4. Relocate (internally)

Static Linking vs. Dynamic Linking

- ▶ Static linking example:
- ▶ Dynamic linking example:

Windows DLLs

Where are we now? Where to next?